REMARKS

The Office Action mailed on August 09, 2004, has been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 1-27 were pending, with claims 3-15 being withdrawn. By this paper, Applicants do not cancel or add any claims and place claims 25 and 26 into independent form. Therefore, claims 1-27 remain pending.

Applicants respectfully submit that the present application is in condition for allowance for the reasons that follow.

Indication of Allowable Subject Matter

Applicants thank Examiner Yee for the indication that claims 25-27 contain allowable subject matter. Applicants hereby place claims 25 and 26 into independent form in order to advance prosecution.

Rejections Under 35 U.S.C. § 102

Claims 1, 2 and 16-24 stand rejected under 35 U.S.C. §102(b) as being anticipated by Japanese laid-open applications 9-291337 and 63-65020. In response, Applicants respectfully traverse the rejection of these claims, and respectfully submit that the claims should be allowed for the reasons that follow.

Applicants rely on MPEP § 2131, entitled "Anticipation – Application of 35 U.S.C. 102(a), (b), and (e)," which states that a "claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." It is respectfully submitted that the cited references do not describe each and every element of claim 1, and thus the claims that depend therefrom.

Claim 1 recites that the steel has a ***surface hardness in a range from 91 to 96 HRB***. In contrast, neither the '337 reference nor the '020 reference teach the claimed hardness. In

support of this position, ***Applicants provide in Exhibit I a conversion table for various scales of hardness***, copied from "Databook of Metals," 4th edition, edited by The Japan Institute of Metals and published by Maruzen Co., LTD, as was directed by the PTO on the first paragraph on page 5 of the Office Action.

Applicants respectfully submit that a hardness range of 91 to 96 HRB is equivalent to a hardness range of about 195 HV to about 225 HV, as is evinced by Exhibit I. That is, the high-end of the claimed hardness range is less than half the value of the low end of the cited hardness range of the '020 reference of 490 HV.

Applicants further respectfully submit that the hardness range recited in claim 1 is equivalent to a hardness range of about 9.75 HRC to about 17 HRC, as is evinced by Exhibit I. That is, the high-end of the claimed hardness range is less than one-third the low end of the cited hardness range of the '337 reference of 54 HRC.

Claim 1 is therefore not anticipated by either of the cited references because the cited hardnesses of the references are all larger than the claimed hardnesses.

* * * * *

Claim 1 further recites that the steel is treated by warm-forging and normalizing. As is recognized in the Office Action, the cited references do not teach this recitation.

Instead, the Office Action asserts that this recitation is not "a patentable consideration." The Office Action further states that "in a product-by-process, the patentabilty is determined by the product per se and not the process steps. The burden falls to the applicant to show that any process steps associated with the claimed product result in a materially different product."

Applicants respectfully submit that the standard proffered in the Office Action ***is incorrect***. The cited MPEP section, §2113, states that "[o]nce the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art . . . the burden shifts to applicant." That is, ***before*** "the burden falls to the applicant to show" that the claimed product is materially different, as is stated in the Office Action, the examiner must ***first*** provide "a rationale tending to show that the claimed product appears to be the same or similar to that of the" cited references. Merely stating that a recitation is not "a patentable consideration" and listing Applicant requirements to overcome

the rejection does not meet the requirement of MPEP §2113 vis-à-vis the PTO's ***initial burden*** when rejecting product-by-process claims.

Moreover, the recitation "the steel is treated by warm-forging and normalizing" is not a product-by-process recitation; it is instead a recitation that requires that the steel have certain mechanical characteristics associated with the recitation in a manner concomitant with "tempered" steel, "extruded" steel, "heat-treated" steel, "drop-forged" steel, etc., all of which have respective mechanical characteristics associated with the quoted phrases. The recitations of claim 1 require that the steel have a materially different feature from non-warm forged and non-normalized steel; a feature that is not present in any of the cited references. By way of example only, the steel of claim 1 results in a composition that provides excellent hardenability and resistance to high-temperature softening, and thus has excellent wear-resistivity after heat treatments of hardening and tempering.

In sum, claim 1 and its dependencies are allowable for at least the reason that neither of the cited references expressly or inherently teach each and every recitation of any single claim. Reconsideration and allowance is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Examiner Yee is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date December 09, 2004 By _____

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2・2 ロックウェル硬さの各種スケール (JIS Z 2245-1998)

スケール	圧 子	初試験力[N](kgf)	全試験力[N](kgf)	備 考
B	1/16″の鋼球	98.07 (10)	980.7(100)	焼なまし鋼材などHRB0～100の範囲の材料
F	〃	98.07 (10)	588.4 (60)	白銅合金など軟質材料
G	〃	98.07 (10)	1471.0(150)	HRB100以上の材料
E	1/8″の鋼球	98.07 (10)	980.7(100)	0点の目盛130．非常に軟らかい材料
H	〃	98.07 (10)	588.4 (60)	非常に軟らかい材料
K	〃	98.07 (10)	1471.0(150)	非常に軟らかい材料
15T 30T 45T	1/16″の鋼球 〃 〃	29.42 (3) 29.42 (3) 29.42 (3)	147.1 (15) 294.2 (30) 441.3 (45)	特別ロックウェル硬さ圧子を用いる．鋼・銅合金などの薄板
C	ダイヤモンド円錐	98.07 (10)	1471.0(150)	普通のロックウェル試験機を用いる HRB100以上 H_RC70以上の材料
A	〃	98.07 (10)	588.4 (60)	超硬合金などの非常に硬い材料
D	〃	98.07 (10)	980.7(100)	0点の目盛 100．表面のみ硬くてCスケールより凹みの小さいことを必要とするとき
15N 30N 45N	〃 〃 〃	29.42 (3) 29.42 (3) 29.42 (3)	147.1 (15) 294.2 (30) 441.3 (45)	特別のロックウェル試験機を用いる 窒化鋼のような硬い材料

2・3 鋼の硬さ換算表 A conversion table between various scales for steel hardness

HV	HB	HRB	HRC	HS	HV	HB	HRB	HRC	HS
85	81	41.0	—	—	450	425	—	45.3	—
90	86	48.0	—	—	460	433	—	46.1	62
95	90	52.0	—	—	470	441	—	46.9	—
105	95	56.2	—	—	480	448	—	47.7	64
110	105	62.3	—		490	456		48.4	
120	114	66.7	—	—	500	465		49.1	66
130	124	71.2		20	510	473		49.8	
140	133	75.0	—	21	520	480		50.5	67
150	143	78.7		22	530	488		51.1	
160	152	81.7	0.0	24	540	496		51.7	69
170	162	85.0	3.0	25	550	505		52.3	
180	171	87.1	6.0	26	560			53.0	71
190	181	89.5	8.5	28	570	—	—	53.6	
200	190	91.5	11.0	29	580	—		54.1	72
210	200	93.4	13.4	30	590			54.7	
220	209	95.0	15.7	32	600			55.2	74
230	219	96.7	18.0	33	610			55.7	
240	228	98.1	20.3	34	620			56.3	75
250	238	99.5	22.2	36	630			56.8	
260	247	101.0	24.0	37	640			57.3	77
270	256	102.0	25.6	38	650	—		57.8	
280	265	103.5	27.1	40	660	—		58.3	79
290	275	104.5	28.5	41	670			58.8	
300	284	105.5	29.8	42	680			59.2	80
310	294	—	31.0		690			59.7	
320	303	107.0	32.2	45	700			60.1	81
330	313	—	33.3		720			61.0	83
340	322	108.0	34.4	47	740			61.8	84
350	331		35.5		760			62.5	86
360	341	109.0	36.6	50	780	—		63.3	87
370	350	—	37.7	—	800			64.0	88
380	360	110.0	38.8	52	820		—	64.7	90
390	369	—	39.8	—	840		—	65.3	91
400	379		40.8	55	860			65.9	92
410	388	—	41.8	—	880	—	—	66.4	93
420	397	—	42.7	57	900	—		67.0	95
430	405		43.6		920	—		67.5	96
440	415	—	44.5	59	940	—	—	68.0	97

HV ビッカース硬さ，HB ブリネル硬さ，HRB：ロックウェル硬さBスケール，HRC ロックウェル硬さCスケール，HS：ショア硬さ
HV: Vickers hardness HB: Brinell hardness HRB: Rockwell-B hardness HRC: Rockwell-C hardness HS: Shore hardness